. INTRODUCTION:

Productivity is the ratio of output to input. Productivity is the measure of the efficiency of the system and it looks at the economies achieved during the process. Every process will have a number of contributors which help in achieving maximum productivity. Those contributing elements are Man, Machines, Materials, Ancillary equipments and technology. In each stages of workflow there is a opportunities to improve the productivity.

In a manufacturing companies it is the material flow in the shop floor decides its productivity. In this process material handling system plays a key role in influencing productivity, throughput time and product cost. In the manufacturing companies productivity is highly influenced by the efficiency of the working human resource along with the tools or operating equipments.

Material handling is the most critical and the integral part of production and operations management. It is defined as movement and storage of materials, goods and products during the process of manufacturing stage, distribution stage, consumption stage and disposal stage at economical cost by adopting proper method and material handling equipments. That means providing the right amount of material, in the proper condition, at the proper place, at the proper time, in the proper position and for the economical cost by using the proper method. Material handling devices increases production output with the improved quality, improves the delivery period with reduction in the production cost.

Material handling cost includes cost of handling, cost of transportation, cost of packaging, cost of storage space, cost of material handling equipment including operation, maintenance and depreciation.

Activity area of Material Handling:-

- Packaging and packing of raw material for the industry
- Loading and transportation to the factory.
- Unloading of materials.
- Receiving, storage, and issue of material for production.
- Process handling.
- Process storage
- Work place handling
• Inter departmental handling
• Intra plant handling.
• Packaging
• Ware housing
• Packing
• Loading and transportation to customer/ distributors/ dealers place

Different type of material handling Systems are as below:-

1. Equipment Oriented System:-
   • Industrial truck System- Platform trucks, skids.
   • Conveyor System
   • Overhead System- cranes, monorails

2. Material (Load) Oriented System:-
   • Unit handling systems.
   • Bulk handling System- Conveyors, draglines, construction equipments
   • Liquid material handling system.

3. Method (production) oriented Systems:-
   • Manual System.
   • Mechanised or Automated Systems.
   • Mass Production handling System.
   • Job handling system.

4. Function Oriented handling Systems:-
   • Transportation System- for horizontal motion.
   • Elevating System:- For vertical motion
   • Conveying System- Horizontal, vertical or combined motion.
   • Transportation System- Horizontal, Inclined or declined motion through the air.
   • Self loading System: Intermittent motion with machines that pick up, move and set down i.e., unit load systems.

Various type of Material handling equipments are :-

A) Manual Equipments
   1. Hand cart.
2. Hand truck
3. Dolly

B) Mechanised Equipments
1. Gravity Conveyor
2. Powerised Roller conveyor
3. Belt Conveyor
4. Power truck
5. Train
6. Overhead travelling crane

C) Automated Equipments
1. Gravity, Power conveyor
2. Dump trucks

The material handling, though does not add any value to product, it generally adds significant element of cost. It generally costs between 15 to 70 % of the cost of the product. The materials handling time and cost can be economized by proper selection, correct operation and preventive maintenance of material handling devices. In the modern era of competition material handling system has reached greater importance because of growing need for reducing the manufacturing cost. The importance of material handling function is higher in those companies where the ratio of material handling cost to the processing cost is very high. In present scenario material handling is rightly considered as one of the most potential lucrative area in reduction of costs. With properly designed and integrated material handling system provides tremendous cost saving opportunities and customer relation improvement potential.

**STATEMENT OF THE PROBLEM**

In the present scenario the production cost increases due to the handling of material from one place to another inside the factory by using the unskilled labour. Due to shortage of labour majority of the manufacturing industries are facing problem and there is a drastic reduction in total output and not achieving the required target. Finally cost of the product increases which they are not in a position to match the Global market. One of the major reason for slow growth of the Indian economy is the improper handling of materials and unnecessary cost incurred. By utilising the material handling system with proper planed
plant layout and automation, there is a drastic reduction labour cost, avoid the damage caused by manual movement of material, which result in better quality output product with less cost of production. Good handling system also improve inventory control, less fatigue of workers, greater industrial safety with less accident potential and disruption of work, improved morale of workers.

Concept of material handling means, adopting a material handling systems from overall optimization point of view. While selecting material handling system one must be see whether it is profitable for the industry. The amount of return on investment must justify the proposed handling system. A detailed cost benefit analysis has to be carried out before the choice of material handling equipments.